

Claims:

What is claimed is:

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A1
1. A method of handling a memory exhaustion condition in a data processing system having first and second regions of physical memory, said method comprising:

detecting a memory exhaustion condition while said second region is mirroring at least part of said first region;

in response to said memory exhaustion condition, at least partially deactivating memory mirroring between said first and second regions; and

augmenting said first region with at least part of said second region, such that said memory exhaustion condition is eliminated.

2. The method of Claim 1, said data processing system compressing real memory into said first region of physical memory, wherein:

said step of detecting a memory exhaustion condition comprises determining that said first region lacks sufficient available capacity to accommodate current requirements for real memory; and

said step of augmenting said first region comprises compressing at least part of said required real memory into said at least part of said second region.

1 3. The method of Claim 2, further comprising:
2 in response to said memory exhaustion condition,
3 recording data relating to said memory exhaustion
4 condition; and
5 subsequently utilizing said data to set a
6 compression ratio for memory compression.

1 4. The method of Claim 1, said data processing system
2 having a mirror mode controller that directs a memory
3 access to said first region or said second region in
4 accordance with one or more mirror mode bits, wherein:
5 said step of augmenting said first region
6 comprises modifying at least one of said one or more mirror
7 mode bits.

1 5. The method of Claim 1, further comprising:
2 after memory mirroring has been at least
3 partially deactivated, determining that memory needs have
4 diminished; and
5 in response, at least partially reactivating
6 mirroring.

1 6. A data processing system comprising:

2 first and second regions of physical memory;
3 detection logic that detects a memory exhaustion
4 condition while said second region is mirroring at least
5 part of said first region; and
6 configuration logic that, responsive to said
7 memory exhaustion condition, at least partially deactivates
8 memory mirroring between said first and second regions and
9 augments said first region with at least part of said
10 second region, such that said memory exhaustion condition
11 is eliminated.

1 7. The data processing system of Claim 6, wherein:

2 said data processing system compresses real
3 memory into said first region of physical memory;
4 said detection logic comprises a memory
5 controller that detects said memory exhaustion condition by
6 determining that said first region lacks sufficient
7 available capacity to accommodate current requirements for
8 real memory; and
9 said configuration logic comprises a memory
10 manager that augments said first region by configuring said
11 memory controller to compress at least part of said real
12 memory into said at least part of said second region.

1 8. The data processing system of Claim 7, wherein:

2 in response to said memory exhaustion condition,
3 said memory manager records data relating to said memory
4 exhaustion condition; and
5 said memory manager subsequently utilizes said
6 data to set a compression ratio for memory compression.

1 9. The data processing system of Claim 6, wherein:
2 said data processing system further comprises a
3 mirror mode controller that directs a memory access to said
4 first region or said second region in accordance with one
5 or more mirror mode bits; and
6 said configuration logic augments said first
7 region by modifying at least one of said one or more mirror
8 mode bits.

1 10. The data processing system of Claim 6, wherein:
2 after memory mirroring has been at least
3 partially deactivated, said configuration logic determines
4 that memory needs have diminished; and
5 in response, said configuration logic at least
6 partially reactivates mirroring.

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1 11. A program product that handles a memory exhaustion
2 condition in a data processing system having a memory
3 controller and first and second regions of physical memory,
4 said program product comprising:

5 a computer usable medium encoding a memory
6 manager;
7 deactivation instructions within said memory
8 manager that at least partially deactivate memory mirroring
9 between said first and second regions in response to a
10 memory exhaustion condition arising while said second
11 region is mirroring at least part of said first region; and
12 augmentation instructions within said memory
13 manager that cause said memory controller to augment said
14 first region with at least part of said second region, such
15 that said memory exhaustion condition is eliminated.

1 12. The program product of Claim 11, said data processing
2 system compressing real memory into said first region of
3 physical memory, and said memory controller detecting said
4 memory exhaustion condition by determining that said first
5 region lacks sufficient available capacity to accommodate
6 current requirements for real memory, wherein:

7 said memory manager augments said first region by
8 configuring said memory controller to compress at least
9 part of said real memory into said at least part of said
10 second region.

1 13. The program product of Claim 12, wherein:
2 in response to said memory exhaustion condition,
3 said memory manager records data relating to said memory
4 exhaustion condition; and
5 said memory manager subsequently utilizes said
6 data to set a compression ratio for memory compression.

1 14. The program product of Claim 11, wherein:
2 said data processing system further comprises a
3 mirror mode controller that directs a memory access to said
4 first region or said second region in accordance with one
5 or more mirror mode bits; and
6 said memory manager augments said first region by
7 modifying at least one of said one or more mirror mode
8 bits.

1 15. The program product of Claim 11, wherein:
2 after memory mirroring has been at least
3 partially deactivated, said memory manager determines that
4 memory needs have diminished; and
5 in response, said memory manager at least
6 partially reactivates mirroring.

1 16. A memory management system that handles a memory
2 exhaustion condition in a data processing system having
3 first and second regions of physical memory, said memory
4 management system comprising:
5 detection logic that detects a memory exhaustion
6 condition while said second region is mirroring at least
7 part of said first region; and
8 configuration logic that, responsive to said
9 memory exhaustion condition, at least partially deactivates
10 memory mirroring between said first and second regions and
11 augments said first region with at least part of said
12 second region, such that said memory exhaustion condition
13 is eliminated.

1 17. The memory management system of Claim 16, said data
2 processing system compressing real memory into said first
3 region of physical memory, wherein:

4 said detection logic comprises a memory
5 controller that detects said memory exhaustion condition by
6 determining that said first region lacks sufficient
7 available capacity to accommodate current requirements for
8 real memory; and

9 said configuration logic comprises a memory
10 manager that augments said first region by configuring said
11 memory controller to compress at least part of said real
12 memory into said at least part of said second region.

1 18. The memory management system of Claim 17, wherein:
2 in response to said memory exhaustion condition,
3 said memory manager records data relating to said memory
4 exhaustion condition; and
5 said memory manager subsequently utilizes said
6 data to set a compression ratio for memory compression.

1 19. The memory management system of Claim 16, wherein:
2 said memory management system further comprises a
3 mirror mode controller that directs a memory access to said
4 first region or said second region in accordance with one
5 or more mirror mode bits; and
6 said configuration logic augments said first
7 region by modifying at least one of said one or more mirror
8 mode bits.

1 20. The memory management system of Claim 16, wherein:
2 after memory mirroring has been at least
3 partially deactivated, said configuration logic determines
4 that memory needs have diminished; and
5 in response, said configuration logic at least
6 partially reactivates mirroring.

1 21. A data processing system comprising:
2 first and second regions of physical memory;
3 detection means for detecting a memory exhaustion
4 condition while said second region is mirroring at least
5 part of said first region; and
6 configuration means, responsive to said memory
7 exhaustion condition, for at least partially deactivating
8 memory mirroring between said first and second regions and
9 augmenting said first region with at least part of said
10 second region, such that said memory exhaustion condition
11 is eliminated.

11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 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